THE MINERAL INDUSTRY OF MALAWI

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Malawi, which is a small country in southern Africa, was a producer of cement, coal, crushed stone, dolomite, kaolin, lime, and limestone for domestic consumption (table 1). The country also produced and exported dimension stone and gemstones. Malawi had deposits of bauxite, columbium (niobium), granite, graphite, kyanite, monazite, phosphate rock, pyrite, silica sand, titanium, uranium, vermiculite, and zirconium (table 3).

In 2004, Malawi's gross domestic product (GDP) amounted to about $7 billion at purchasing power parity. The GDP rose by 4.3% in 2004 compared with 3.9% in 2003. Manufacturing accounted for 11% of the GDP; construction, 2%; electricity and water, 1%; and mining and quarrying, 1%. In 2003, the mining sector grew by 23.5%, and the construction sector, by 4%. Formal employment in the mining sector amounted to about 2,700 workers in 2004; artisanal mining for aggregate and sand and gravel was estimated to be considerably greater (International Monetary Fund, 2004, p. 46; 2005, p. 206; 2005§[1]; Ackim Wona, Chief Mining Engineer, Malawi Department of Mines, written commun., July 18, 2005).

Commodity Review

Metals

Nickel and Platinum-Group Metals.—Albidon Ltd. of Australia held exclusive prospecting licenses for the Katakwi and the Mpemba projects. Following exploration at Mpemba in 2004, WMC Resources Exploration Pty. Ltd. of Australia decided to terminate its joint venture with Albidon. Further exploration for nickel and platinum-group metals at Katakwi and Mpemba was planned by Albidon in early 2005 (Albidon Ltd., 2005, p. 17-18).

Titanium and Zirconium.—Millennium Mining Ltd. (a subsidiary of Malawi Minerals Ltd.) held exclusive prospecting licenses for the Lake Chilwa, the Makanjila, and the Senga Bay mineral sands deposits. The company was engaged in feasibility studies on producing 500,000 metric tons per year (t/yr) of ilmenite from Makanjila and Senga Bay (Mining Review Africa, 2005).

Depending on favorable results of these studies, Millennium planned to conduct a feasibility study on building a smelter at Chipoka. The smelter would use raw material from Makanjila and Senga Bay to produce 250,000 t/yr of titanium slag, about 125,000 t/yr of pig iron, and significant amounts of rutile and zircon. The smelter was expected to cost $250 million; the mining projects, $50 million; and the feasibility studies, $4 million. Power requirements for the smelter were expected to be 100 megawatts (MW) (Mining Review Africa, 2005).

Allied Procurement Agency and Mineral Sands Ltd. of South Africa held an exclusive prospecting license for mineral sands at Chipoka. The companies planned to start mining at Chipoka in 2005 (Ackim Wona, Chief Mining Engineer, Malawi Department of Mines, written commun., July 18, 2005).

Industrial Minerals

Gemstones.—Malawi produced a variety of gemstones that included ruby and sapphire from the Chimwadzulu Hill Mine. Starting in early 2003, systematic prospecting and an expansion in mining substantially increased the quantity and quality of production at Chimwadzulu Hill. The mine produced as much as 1 kilogram per month (kg/mo) of cuttable ruby. By the end of 2004, the capacity of the mine increased to 5 kg/mo of cuttable ruby and pinkish-orange sapphire with the installation of a new washing plant (Boehm, 2004; Laurs, 2004).

Lime.—National lime production increased to 23,095 t in 2004 from 18,877 t in 2003 (table 1). Production increased because of higher demand from the construction, livestock and poultry, and paint manufacturing industries (Ackim Wona, Chief Mining Engineer, Malawi Department of Mines, written commun., July 18, 2005).

Stone, Crushed.—The production of aggregate rose to 168,600 metric tons (t) in 2004 from 159,954 t in 2003 because of increasing infrastructure development. Large-scale quarries accounted for 89% of domestic production, and artisanal miners, 11%. Shayona Cement Corp. quarried limestone for use in its cement plant at Livwezi. In 2004, the company's limestone production fell to 21,224 t from 23,965 t because of coal shortages at the cement plant (Ackim Wona, Chief Mining Engineer, Malawi Department of Mines, written commun., July 18, 2005).

Mineral Fuels

Coal.— Mchenga Coal Mines operated a mine in the Livingstonia coal field. Domestic demand for coal was about 100,000 t/yr; consumers included beverage manufacturers, breweries, and the cement, soap, and textile industries. Mchenga also exported about 12,000 t/yr of coal to Mbeya Cement of Tanzania. In the fourth quarter of 2004, the company planned to start exploration for

[1]A reference that includes a section mark (§) is found in the Internet Reference Cited section.

additional reserves in the Livingstonia coal field. Mchenga produced at a rate of 60,000 t/yr in late 2004; the company planned to open the Chombe Mine in Livingstonia and to increase its output to 96,000 t/yr by March 2005 (Chimwala, 2004a, b).

Uranium.—Paladin Resources Ltd. of Australia planned to start a bankable feasibility study on the Kayelekera uranium project by mid-2005. The 18-month study was expected to cost about $2 million. Capital costs were estimated to range from $50 million to $55 million. Paladin planned to produce 1,000 t/yr of U_3O_8 starting in 2008 or 2009 if the feasibility study yielded favorable results. The life of the mine was expected to be 10 years (Paladin Resources Ltd., 2004).

Infrastructure

The Electricity Supply Company of Malawi (ESCOM) was the country's only large-scale producer of electricity. ESCOM operated power stations with a combined capacity of 290 MW, of which 285 MW was from eight hydroelectric plants. About 21% of ESCOM's hydroelectric capacity was unavailable because of aging and damaged equipment, aquatic weeds, and siltation. Deforestation for charcoal and subsistence farming was the main cause of siltation; Malawi lost an average of 1,250 square kilometers per year of forest (Munthali, 2004; United Nations Integrated Regional Information Networks, 2004a).

In May 2004, the Organization of the Petroleum Exporting Countries Fund for International Development agreed to lend Malawi $5 million to upgrade about 260 kilometers (km) of roads. The upgrade was likely to be completed in 2007 or 2008. Malawi had about 15,500 km of roads, of which 3,600 km was paved (United Nations Integrated Regional Information Networks, 2004b).

Outlook

Because most output of Malawi's mineral industry was for local consumption in 2004, the short-term outlook for most currently produced minerals depends on the state of the domestic economy. The International Monetary Fund (2005, p. 208) predicted that Malawi's economy would grow by 4.8% in 2005 and 5.1% in 2006. The outlook for many undeveloped mineral commodities is tied to strong global demand because severe poverty limits domestic markets for bauxite, columbium (niobium), rare-earth elements, tantalum, titanium, and uranium.

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TABLE 1
MALAWI: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2000	2001	2002	2003	2004
Cement, hydraulic		155,920	180,761	174,283	190,000 e	190,000 e
Coal:						
Bituminous		34,250	34,410	43,372 r	47,037 r	40,891
Lignite		--	--	-- r	-- r	--
Dolomite		--	49	4,394	5,400 e	5,400 e
Gemstones	kilograms	1,200 r, e	1,800 r, e	2,305 r	2,297 r	1,820
Kaolin		719	825	636	800 e	800 e
Lime		21,886	6,177 r	6,776 r	18,877 r	23,095
Ornamental stones		NA	NA	120	450	320
Sodium silicate		1,538	--	--	-- e	-- e
Stone:						
Crushed for aggregate		125,200 r	594,979	113,992 r	159,954 r	168,600
Dimension, crude and partly worked		78	483	170 r, e	130 r, e	130 e
Limestone, for cement		144,000 e	167,000 e	86,234 r	23,965 r	21,224
Vermiculite		--	1	-- r	-- r	--

[e]Estimated; estimated data are rounded to no more than three significant digits. [r]Revised. NA Not available. -- Zero.
[1]Includes data available through July 19, 2005.
[2]In addition to commodities listed, modest quantities of gypsum and salt and unlisted varieties of crude construction materials (clays, gravel, and other stone) may also be produced, but information is inadequate to make reliable estimates of output levels.

TABLE 2
MALAWI: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Cement	Portland Cement Co. Ltd.	Plant at Blantyre	288,000.
Do.	do.	Plant at Changalume	180,000.
Do.	Shayona Cement Corp.	Plant at Livwezi	37,000.
Coal, bituminous	Mchenga Coal Mines	Mine at Mchenga	60,000.
Dimension stone	Ilomba Granite of Blantyre	Mine at Ilomba Hill	NA.
Fertilizers	Optichem Ltd.	Plant at Blantyre	40,000.
Limestone	Shayona Cement Corp.	Mine in Kasungu Province	NA.
Ruby and sapphire kilograms	Agricola Resources plc	Mine at Chimwadzulu Hill	10 ruby; 30 sapphire.[e]

[e]Estimated. NA Not available.

TABLE 3
MALAWI: MINERAL RESOURCES IN 2004[1]

Commodity	Deposit	Tonnage	Grade	Mineral content
Bauxite	Mulanje Mountain	26 Mt	43.3% Al_2O_3	11 Mt Al_2O_3.
Coal	Ngaga	15 Mt	NA	NA.
Do.	Mwabvi	4.7 Mt	NA	NA.
Do.	Livingstonia (Mchenga Mine)	2 Mt	NA	NA.
Columbium (niobium)	Tundulu	0.9 Mt	0.37% Nb_2O_5	3,300 t Nb_2O_5.
Do.	Chilwa Island	0.38 Mt	0.95% Nb_2O_5	3,600 t Nb_2O_5.
Do.	Ilomba Hill	0.1 Mt	3% Nb_2O_5	3,000 t Nb_2O_5.
Kaolin	Linthipe	14 Mt	33.8% Al_2O_3	
Limestone	Malowa Hill	4.1 Mt	52% CaO	
Marble	do.	3.7 Mt	36.21% CaO	
Phosphate rock	Tundulu	2 Mt	17% P_2O_5	340,000 t.
Pyrite	Chisepo	34 Mt	8% S	2.7 Mt.
Strontium and rare earths	Kangankunde	11 Mt	8% Sr; 2% REE	880,000 t Sr; 220,000 t REE.
Titanium	Makanjila	1,000 Mt	5.2% ilmenite	52 Mt ilmenite
Do.	Lake Chilwa	1,000 Mt	7.05% ilmenite; 0.11% rutile; 1.16% zircon	71 Mt ilmenite; 1.1 Mt rutile; 12 Mt zircon.
Do.	Salima	500 Mt	8.4% ilmenite; 0.38% rutile; 0.28% zircon	42 Mt ilmenite; 1.9 Mt rutile; 1.4 Mt zircon.
Do.	Tengani	108 Mt	11% ilmenite; 2% rutile; 1% zircon	12 Mt ilmenite; 2.2 Mt rutile; 1.1 Mt zircon.
Uranium	Kayelakera	7.7 Mt	0.15% U_3O_8	11,500 t U_3O_8.
Vermiculite	Mwanza District	2.5 Mt	10% vermiculite	250,000 t.

NA Not available.

[1]Abbreviations used in this table for commodities include the following: Al_2O_3--aluminum oxide; C--carbon; CaO--calcium oxide; Nb_2O_5--columbium (niobium) oxide; P_2O_5--phosphorous pentoxide; REE--rare-earth elements; S--sulfur; SiO_2--silicon dioxide; Sr--strontium; U_3O_8--uranium oxide; and V--vanadium. Abbreviations used in this table for units of measurement include the following: Mt--million metric tons, and t--metric tons.

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